IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Application of:		)
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Inventors:	Kai-Chieh Liang	)
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Serial No.:	10/670,949	) ATTORNEY FILE NO.
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		)
Filed:	September 25, 2003	)
		)
Title:	URI POINTER SYSTEM AND METHOD FOR THE CARRIAGE OF MPEG-4 DATA IN AN MPEG-2 TRANSPORT STREAM FILE SYSTEM	) Customer No.: 55,286) Examiner: Luong, Alan H.)) Art Unit: 2623) Conf. No.: 2056

Board of Patent Appeals and Interferences
United States Patent and Trademark Office
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BRIEF ON APPEAL

This is an appeal from the rejection by Examiner Alan H. Luong, Group Art Unit 2623, of claims 1, 6-15, 20-26, 31-40, and 45-50, as set forth in the CLAIMS APPENDIX.

TABLE OF CONTENTS

REAL PARTY IN INTEREST

The real party in interest is Sharp Laboratories of America, Inc., as assignee of the present application by an Assignment in the United States Patent Office, with a recordation date of September 25, 2003, at Reel 014568, Frame 0224.

RELATED APPEALS AND INTERFERENCES

None.

STATUS OF THE CLAIMS

Claims 1, 6-15, 20-26, 31-40, and 45-50 are in the application.

Claims 2-5, 16-19, 27-30, and 41-44 are canceled.

Claims 1, 6-15, 20-26, 31-40, and 45-50 are rejected.

Claims 1, 6-15, 20-26, 31-40, and 45-50 are appealed.

STATUS OF AMENDMENTS

Amendments to the claims were made in an Office Action response mailed on April 7, 2008. These claim amendments have been entered.

SUMMARY OF CLAIMED SUBJECT MATTER

The claimed invention recites a means for carrying MPEG-4 data, as organized in an MPEG-2 object carousel (OC). Since the OC is a protocol explicitly designed to manage data in an MPEG-2 TS – the MPEG-4 data can be carried without modifying the MPEG-2 protocols. However, MPEG-2 OCs have no meaning in the context of MPEG-4 and, thus, there is no simple means of retrieving the MPEG-4 resources.

Local identifier (lid) uniform resource indicators (URIs) are a tool, which is understood in the MPEG-4 context, used for locating MPEG-4 resources. The primary novelty of the claimed invention is that MPEG-4 resources can be loaded (or retrieved) from an MPEG-2 OC by using lids to create linkages to the MPEG-4 data objects in the MPEG-2 OC. In the language of the claims, the lid URIs provide a binding name and access scheme to the objects in the OC. Thus, the MPEG-4 resources can be carried as MPEG-2 data, but retrieved and loaded (encoded/decoded) as MPEG-4 data.

Claim 1 recites a URI pointer method for retrieving MPEG-4 data pointers in an MPEG-2 transport stream (TS), see specification – page 26, ln. 3 through page 28, ln. 2; page 30, ln. 4-23; and Figs. 7 and 8. Step 802 (Fig. 8) receives an MPEG-2 TS embedded with MPEG-4 resources organized in an OC transport protocol (page 30, ln. 4 and 20-22. Step 804 locates a URI in the TS using a lid retrieved from the MPEG-2 TS (page 30, ln. 4-5 and 16-18). A detailed explanation of URIs and lids is provided in the specification at page 26, ln. 3 through page 27, ln. 3. Step 808 retrieves MPEG-4 resources from the MPEG-2 TS using lid URIs to provide a binding name and access scheme to objects in the OC (page 30, ln. 21-23). A detailed explanation of how lids creating a binding name to directory links in a digital storage media command and control (DSM-CC) OC is provided on page 27, ln. 4 through page 28, ln. 2 (Fig. 7). Step 810 decodes the MPEG-4 resources (page 30, ln. 8).

Claim 15 recites a URI pointer method for broadcasting pointers to MPEG-4 data in an MPEG-2 TS (see specification – page 31, ln. 14 through page 32, ln. 2; Fig. 9). Step 905 embeds MPEG-4 resources in an MPEG-2 TS, organized in an OC transport protocol (page 31, ln. 22-

23). Step 902 generates a lid URI for accessing MPEG-4 resources, using the lid URIs to provide a binding name and access scheme to objects in the OC (page 31, ln. 16-21 and 23-26). Step 904 embeds the URI in the MPEG-2 TS (page 31, ln. 17-18). Step 906 broadcasts the MPEG-2 TS (page 31, ln. 18).

Claim 26 recites a receiver for decoding MPEG-4 data with a URI pointer system for accessing pointers to MPEG-4 data in an MPEG-2 TS (specification – page 8, ln. 26 through page 10, ln. 12; Fig. 2). A receiver 202 has an interface on line 204 for accepting an MPEG-2 TS with an embedded URI for accessing MPEG-4 resources (page 9, ln. 1-3). An address access unit (AAU) 206 accepts the MPEG-2 TS, locates a lid URI in the TS , and retrieves MPEG-4 resources embedded and organized in an MPEG-2 OC by building a directory 222 and using lid URIs to provide a binding name and access scheme to the objects in the OC (page 9, ln. 20 through page 10, ln. 12). A decoder 210 has an interface connected to the AAU on line 212 for receiving the MPEG-4 resources and supplying decoded MPEG-4 information on line 214 (page 9, ln. 8-10).

Claim 40 recites an MPEG-4 broadcaster with a URI pointer system for supplying an MPEG-2 TS with URIs for accessing MPEG-4 data (specification – page 11, ln. 18 through page 13, ln. 14.; Fig. 4). An encoder 310 has an interface on line 312 to accept MPEP-4 information and an interface on line 314 to supply encoded MPEG-4 resources (page 12, ln. 25 through page 13, ln. 2). An address pointer unit (APU) 302 accepts the encoded MPEG-4 resources on line 314 and embeds the encoded MPEG-4 resources in an MPEG-2 TS using an OC transport protocol, and generates lid URIS for accessing MPEG-4 resources in the MPEG-2 TS by using the lid URIs to provide a binding name and access

scheme to objects in the OC. The MPEP-2 TS is supplied on line 302 (page 13, ln. 6-14). A transmitter has an interface on line 304 to accept the MPEG-2 TS and an interface on line 308 to broadcast the MPEG-2 TS (page 12, ln. 17-19).

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

1. Whether claims 1 and 6-14 are unpatentable under 35 U.S.C. 103(a) with respect to Admitted Prior Art (APA) in view of Herpel, "Elementary Stream Management in MPEG-4, IEEE, March 1999 ("Herpel") and Waki et al. ("Waki"; EP 1045564).

2. Whether claims 15 and 20-39 are unpatentable under 35 U.S.C. 103(a) with respect to the APA in view of Herpel and Waki, and further in view of Yokomizo (US 2002/0124263).

3. Whether claims 40 and 46-50 are unpatentable under 35 U.S.C. 103(a) as unpatentable with respect to the APA in view of Yokomizo, and further in view of Ito et al. ("Ito"; US 6,377,309).

ARGUMENT

1. The rejection of claims 1 and 6-14 under 35 U.S.C. 103(a) as unpatentable with respect to Admitted Prior Art (APA) in view of Herpel, "Elementary Stream Management in MPEG-4, IEEE, March 1999 ("Herpel") and Waki et al. ("Waki"; EP 1045564).

CLAIM 1

In Section 2 of the Office Action claims 1 and 6-14 have been rejected under 35 U.S.C. 103(a) as unpatentable with respect to Admitted Prior Art (APA) in view of Herpel, "Elementary Stream Management in MPEG-4, IEEE, March 1999 ("Herpel") and Waki et al. ("Waki"; EP 1045564). With respect to claim 1, the Office Action states that the APA discloses using a lid URI to retrieve MPEG-4 resources in an MPEG-2 TS. The Office Action acknowledges that the APA fails to use lid URIs to provide a binding name and access scheme to objects in the OC, but that Herpel and Waki disclose this feature. This rejection is traversed as follows.

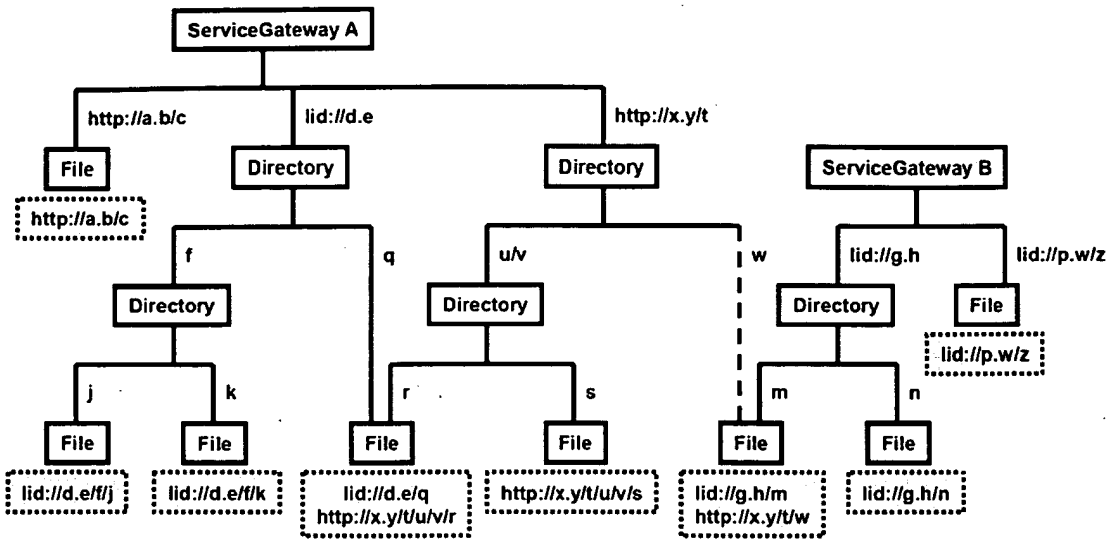
IOR, BIOPProfileBody and NSAP are address schemes specified in the DSM-CC specification to uniquely identify an object in an Object Carousel (OC). DSM-CC is a part of MPEG-2 (Part 6), and a DSM-CC OC and it's defined address structure schemes (such as IOR, NASP, etc.) can be used to carry any kind of data including MPEG-4 files, JPEG files, or Microsoft word documents, to name a few examples. Further, a

DSM-CC OC can be used to build a hierarchical directory structure to carry these types of data.

In contrast, a MPEG-4 system is built around an Initial Object Descriptor (IOD), no matter if it is carried over MPEG-4 File Format, IP, or any kind of transport. IOD is the entry gateway of the MPEG-4 system, from which all other elementary streams (ES) such as scene, video, audio, are linked together. In the MPEG-4 specification, there are only two linkage (reference/address) methods defined, one is called elementary stream identifier (ES-ID), the other is URL. The specification does not permit any other address scheme. An ES-ID is unique to each ES, so a decoder can find the ES in the transport stream by identifying its ES-ID. A URL is also unique to each ES. The claimed invention uses a lid type of URL/URI.

Therefore, although an MPEG-2 can carry MPEG-4 data, the data is not carried in accordance with the MPEG-4 specification. An MPEG-2 OC does not provide a way to encode or decode MPEG-4 resources. Alternately stated, MPEG-4 specification does not mention or permit any specific MPEG-2 OC address schemes such as IOR or NSAP addresses. Only ES-ID and URL/URI address schemes are permitted for encoding/decoding.

The claimed invention describes a system that carries data in an MPEG-2 OC. However, the use of a lid URI permits an MPEG-4 to encode or decode MPEG-4 data in the OC. That is, the use of a lid URI decouples the addressing (binding) scheme from the one defined by the OC. In fact, it doesn't matter what addressing scheme the MPEG-2 OC uses, as long as the lid URI linkages are present. A URI based hierarchical directory structure is as shown below (Fig. 7 of the



specification). Each object is referenced by a lid or http URI (some are referenced both by a http and a lid). Each object also has a NSAP address because it is an object in the DSM-CC OC. However, only the base URI need be associated with an NSAP address in the DSM-CC OC. Once the linkage is created, the rest of the objects can be referenced relatively in the OC. Note however, that a NASP address is not the same as a URI address. Likewise, the address schemes are different. However, an object may have an address in both schemes.

As noted in the Applicant's specification (paragraph [0118]), a lid URI is defined in accordance with SMPTE 343M-2002, as follows:

> A lid: can be bound to a resource entity during authoring and distribution, and may be used to name a device-independent storage location for the entity. The lid: scheme is syntactically similar to the http: scheme, but it is not intended to resolve lid: identifiers to locations outside the broadcast stream or local storage system, as is the case for http: DNS and resource resolution.

A complete copy of SMPTE 343M-2002 is enclosed in the Evidence Appendix.

The APA presents details of conventional MPEG-4 and MPEG-2 protocols, citing paragraphs 0006-0015. Paragraphs 0006 lists a number of protocols closely related to MPEG-2, and notes that the carriage of MPEG-4 data using MPEG-2 transports is a problem yet to be solved.

Paragraph 0007 states that ISO/IEC 13818-1 describes a FlexMux encapsulation scheme (also see Herpel, Fig. 8). The MPEG-4 content is referenced using a Program Map Table (Table 1, [0008-0014]). The Program Map Table does not list a lid URI, or the use of a lid URI to access MPEG-4 data in an MPEG-2 TS.

Beginning at [0015], the APA describes the procedure for playing MPEG-4 content. IODs are mentioned, which contain ES_descriptors for BIFS scene and object descriptor streams. Paragraph [0019] states that a URL in an ES-Descriptor can be used to specify a location from which a BIFS stream can be retrieved. The above-cited paragraphs do not disclose an MPEG-2 TS embedded with MPEG-4 organized in an OC or DSM-CC U-U. As noted above, a conventional MPEG-4 system does not encode or decode MPEG-4 resources in a DSM-CC OC. Further, the APA makes no mention is made of a lid, and no mention is made of a lid being used to locate a URI in a MPEG-2 TS.

In Section IV C (page 321) Herpel states that MPEG-2 TSs may be used to encapsulate MPEG-4 streams. Three approaches are presented on page 322 for encapsulating MPEG-4 streams in an MPEG-2 TS, they are: 1) Single Stream Encapsulation; 2) FlexMux Stream Encapsulation; and, 3) Digital Storage Media. Herpel states that Single Stream Encapsulation method is inefficient (pg 322). Herpel states that

the FlexMux mapping to a PID can be used to reduce bandwidth. The Applicant notes that neither the Single Stream nor FlexMux method use a URI, and more particularly a lid URI to locate, access, or retrieve MPEG-4 resources from an MPEG-2 TS. Finally, Herpel describes using a DSM-CC carousel for embedding MPEG-4 resources in an MPEG-2 broadcast. The advantage of the approach is that several SL-packetized ESs can be multiplexed into one PID. However, the disadvantage is that the DSM-CC data carousel must be regularly repeated to allow random tune-in. Herpel doubts that "....this enormous waste of bandwidth will be tolerated by service providers." As noted above, there are only 2 MPEG-4 addressing schemes: ES-ID and URL. Herpel does not disclose a method of using lid URIs to provide a binding name and access scheme to objects in the OC. In fact, Herpel appears to be describing an ES-ID system, and Herpel's "regular repeating" method points away from the recited use of lid URIs to locate resources. Alternately stated, although Herpel states that MPEG-4 data can be carried in a DSM-CC OC, he provides no linkage between the IOD needed in an MPEG-4 system for encoding/decoding, and the DSM-CC OC. In the claimed invention, the lid URI provides a linkage between the MPEG-4 and MPEG-2 (DSM-CC) systems.

Waki, in paragraphs [0006-0010] describes a conventional MPEG-2 DSM-CC protocol. No mention is made in the cited paragraphs of using the DSM-CC protocol for the carriage of MPEG-4 data. In paragraphs [0017-0019], Waki presents definitions for IOP::IOR and BIOP. The cited paragraphs do not describe the carriage of MPEG-4 data in an MPEG-2 TS, a URI, a lid URI, or retrieving MPEG-4 resources from

an MPEG-2 TS by using a lid URI to provide a binding name and access scheme to objects in an OC. Paragraphs [0132] describes a BIOP::Binding structure. Paragraph [0136] describes Fig. 28, BIOP defining "objectinfo". Paragraph [0137 describes Fig. 20, definition of BIOP. [0138] describes the direct directory message body in Fig. 20. [0139] describes the insertion of a direct directory message into the "objectinfo" in the BIOP. The direct directory message body is shown in Fig. 6, objects are shown in Figs. 4-5, and directory objects are shown in Figs. 21-22. [0140] describes Fig. 23, a flowchart of the transmitter apparatus 300.

The Applicant notes that the cited sections fail to disclose the exact terms or the general concepts of a URI or lid URI. Thus, the cited section necessarily fails to describe using lid URI to provide a binding name and access scheme to objects in an OC. In fact, the Waki reference fails to even mention to term "MPEG-4", and does not describe a means of carrying MPEG-4 resources in an MPEG-2 TS. The Waki reference appears to have absolutely no relevance to the claimed invention.

The ***Response to Arguments*** Section of the Office Action states that Waki's IOR is the equivalent of a lid URI, as the IOR contains a BIOPProfileBody – all the information pertaining to an object that is needed to uniquely needed to identify the object and locate it within a Service Domain specified by an NSAP address. However, as explained in detail above, while NSAP addresses have relevance in DSM-CC, this type of addressing scheme does not permit encoding or decoding in accordance with the MPEG-4 specification. More important, Waki does not describe a means for an MPEG-4 system to gain access to the NSAP addresses. The claimed invention provides this linkage through the use of a lid URI.

The ***Advisory Action*** mailed on September 22, 2008, again asserts that, "Waki teaches the usage of lid URIs to access information within an MPEG-2 DSM-CC object carousel." Based on the evidence presented above, the Applicant reiterates that there is no such thing as a lid URI in the context of MPEG-2 in general, and DSM-CC in particular. Further, even if there was a linkage, the Applicant cannot find the terms "URI" or "lid" mentioned in the Waki disclosure.

Unlike the more conventional page or http address URI, which is commonly referred to as a URL, the claimed invention recites a narrowly prescribed version of a URI – a local identifier (lid). Unlike a URI (URL) that points to a web address, or a URI that points to an address in memory, a lid URI permits resources to be referenced in a broadcast message. Alternately stated, a lid URI has the unique ability to label resources that are only available in a broadcast scheme. The use of an MPEG-2 Object Carousel is not new. However, the use of a lid URI to create a linkage between MPEG-4 and MPEG-2 OC is novel.

An invention is unpatentable if the differences between it and the prior art would have been obvious at the time of the invention. As stated in MPEP § 2143, the *KSR International Co. v Teleflex Inc.* decision (82 USPQ2d 1385, 1395-1397, 2007) suggests 7 exemplary rationales to support a conclusion of obviousness, which include:

A) Combining prior art elements according to known methods to yield predictable results;

B) Simple substitution of one known element for another to obtain predictable results;

C) Use of known technique to improve similar devices (methods, or products) in the same way;

D) Applying a known technique to a known device (method, or product) ready for improvement to yield predictable results;

E) "Obvious to try" – choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success;

F) Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations are predictable to one of ordinary skill in the art;

G) Some teaching, suggestion, or motivation in prior art would have lead one of ordinary skill to modify the prior art reference or the combine prior art references teachings to arrive at the claimed invention.

The Office Action states that modifications to the APA would have been obvious to one of ordinary skill in the art in light of Herpel and Waki. This rejection appears to be most closely grounded in the G) rationale - Some teaching, suggestion, or motivation in prior art would have lead one of ordinary skill to modify the prior art reference or the combine prior art references teachings to arrive at the claimed invention.

With respect to this rationale, MPEP 2143 (G) states that the rejection must articulate the following criteria to resolve the *Graham* factual analysis:

(1) a finding that there was some teaching, suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings;

(2) a finding that there was a reasonable expectation of success; and

(3) whatever additional findings based on the Graham factual inquiries may be necessary, in view of the facts of the case under consideration, to explain a conclusion of obviousness.

With respect to the above-referenced first factual analysis criteria, none of the references disclose using a local identifier (lid) to locate a URI in the MPEG-2 TS. In fact, none of the references mention the term "lid", or any functional equivalent. Finally, none of references retrieve MPEG-4 data from an MPEG-2 TS by using lid URIs to provide a binding name and access scheme to objects in the OC. The APA and Herpel describe a FlexMux method of carrying MPEG-4 data in an MPEP-2 TS. Herpel also mentions Single Stream and DSM-CC methods. However, none of the references use a lid to retrieve MPEG-4 resources by providing a name/access scheme to OC objects. Therefore, even if all three references are combined, the combination does not include every limitation recited in claim 1.

The Office Action states that it would have been obvious to apply the features of Herpel to the APA as a way to develop transport encapsulated MPEG-4 streams in MPEG-2 TSs in real-time digital broadcasting, and that it would have been obvious to combine Waki to provide a binding name and access scheme to objects in an OC. In traverse, the Applicant notes that these assertions do not suggest the use the use of lid URIs to provide a binding name and access scheme to the objects in the OC. As noted above, none of the references disclose a lid

URI. A *prima facie* analysis of motivation is especially critical in the present circumstances since the rejection is predicated on limitations that are not explicitly disclosed in the prior art references. The claimed invention can only be obvious if an artisan makes substantial modifications to the APA. However, there is nothing in the Herpel and Waki references that suggest a modification based upon the use of lid URIs.

Neither does the obviousness rejection provide evidence that such a modification would have been obvious to one with skill in the art based upon what was well known at the time of the invention. "(A)nalysis [of whether the subject matter of a claim would have been obvious] need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ." *KSR Int'l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727, 1740-41, 82 USPQ2d 1385, 1396 (2007). However, if the *prima facie* rejection is supported by what was known by a person of ordinary skill in the art then additional evidence should have been provided. Notable, when the source or motivation is not from the prior art references, "the evidence" of motive will likely consist of an explanation or a well-known principle or problem-solving strategy to be applied". *DyStar*, 464 F.3d at 1366, 80 USPQ2d at 1649. The Office Action does not supply evidence that it was well known at the time of the invention to use lid URIs to provide a binding name and access scheme to the objects in the OC.

With respect to the second analysis criteria needed to support the G) obviousness rationale, even if an artisan were given the

APA, Waki, and Herpel references as a foundation, no evidence has been provided to show that there is a reasonable expectation of success in the claimed invention. That is, there can be no reasonable expectation of success if the references, and what was known by artisan at the time of the invention, do not teach all the limitations of the claimed invention.

In summary, the Applicant respectfully submits that a *prima facie* case of obvious has not been supported since the combination of the APA, Waki, and Herpel does not explicitly disclose every limitation of claim 1. Neither has a case been supported that the APA can be modified to supply the missing limitations in view of Herpel and Waki, or what was well known by a person of skill at the time of the invention.

CLAIMS 6-14

Claims 6-14 recite additional details of the MPEG-2 OC (claims 6 and 7), the use of two MPEG-2 TSs (claim 9), data types (claim 10), establishing an interactive link (claims 11 and 14), caching an OC directory (claim 12), and retrieving a cached directory (claim 13). Since claims 6-14 are dependent from claim 1, they can be distinguished from the cited prior art references, as the references do not explicitly disclosure or suggest all the limitations of claim 1.

2. The rejection of claims 15 and 20-39 as unpatentable under 35 U.S.C. 103(a) with respect to the APA in view of Herpel and Waki, and further in view of Yokomizo (US 2002/0124263.

CLAIMS 15 and 26

In Section 3 of the Office Action claims 15 and 20-39 have been rejected under 35 U.S.C. 103(a) as unpatentable with respect to the APA in view of Herpel and Waki, and further in view of Yokomizo (US 2002/0124263). With respect to claims 15 and 26, the Office Action states that the APA/Herpel/Waki fails to disclose embedding a URI in a broadcast MPEG-2 TS, but that Yokomizo discloses this feature. This rejection is traversed as follows.

Yokomizo discloses a system that transmits MPEP-2 data with a BIFS object, which appears as a button on a viewer's screen. The button is linked to a URL. When the viewer "pushes" the button, a connection is made by HTTP protocol to the viewer's set top box, and a synch layer is set for an MPEG-4 stream transmission [0030-0034]. As noted above in response to the rejection of claim 1, a URL that accesses a web address can be differentiated from a lid URI that accesses information in a broadcast data stream. Yokomizo does not disclose embedding MPEG-4 resources in an MPEG-2 stream using an OC transport protocol, or using lid URIs to provide a binding name and access scheme to the objects in the OC.

The ***Advisory Action*** mailed September 22, 2008 states that Yokomizo's "URI includes a lid directory....", citing [0115 and Fig. 8A. Fig. 8A does disclose a URL in a database cross-referenced to a name. However, the term "lid" is neither mentioned nor shown. Further, the Applicant is unaware of a "lid directory" as a concept or construct.. The Examiner repeatedly assumes that a URI (or URL) web address is the same as a lid URI. As explained in detail above, a lid URI is a narrowly defined type of URI, and not a web address.

None of the four references disclose using a local identifier (lid) to locate a URI in the MPEG-2 TS. None of the references mention to term "lid", or any functional equivalent. None of references retrieves MPEG-4 data from an MPEG-2 TS by using lid URIs to provide a binding name and access scheme to objects in the OC. Therefore, even if all four of the references are combined, the combination does not include every limitation recited in the claimed invention. Neither is there a suggestion to modify references in such a way as the make the claimed invention obvious, since none of the references describe the use of a lid URI, or how a lid URI can be used to access MPEG-4 resources in an MPEG-2 TS. Finally, no evidence has been provided that the use of a lid URI was well known to practitioners in the art, for the carriage of MPEG-4 data in an MPEG-2 TS, as recited in claims 15 and 26.

CLAIMS 20-25 AND 31-39

Claims 6-14 recite additional details of the MPEG-2 OC (claims 20-22 and 31-33, the use of two MPEG-2 TSs (claims 23 and 34), data types (claims 24 and 35), establishing an interactive link (claims 25, 36, and 39), caching an OC directory (claim 37), and retrieving a cached directory (claim 38). Since claims 20-25 and dependent from claim 15, and claims 31-39 are dependent from claim 26, they can be distinguished from the cited prior art references, as the references do not explicitly disclosure or suggest all the limitations of claims 15 and 26.

3. The rejection of claims 40 and 46-50 as unpatentable under 35 U.S.C. 103(a) with respect to the APA in view of Yokomizo, and further in view of Ito et al. ("Ito:, US 6,377,309).

CLAIM 40

In Section 4 of the Office Action claims 40 and 45-50 have been rejected under 35 U.S.C. 103(a) as unpatentable with respect to the APA in view of Yokomizo, and further in view of Ito et al. ("Ito:, US 6,377,309). With respect to claim 40, the Office Action states that Yokomizo fails to disclose embedding an MPEG-4 encoder, but that Ito discloses this feature. This rejection is traversed as follows.

Ito does not disclose embedding MPEG-4 resources in an MPEG-2 stream using an OC transport protocol, or using lid URIs to provide a binding name and access scheme to the objects in the OC.

Even if Ito's encoder is combined with Yokomizo and the APA, none of the references disclose using a local identifier (lid) to locate a URI in the MPEG-2 TS. None of the references mention to term "lid", or any functional equivalent. None of references retrieves MPEG-4 data from an MPEG-2 TS by using lid URIs to provide a binding name and access scheme to objects in the OC. Therefore, even if all the references are combined, the combination does not include every limitation recited in the claimed invention. Neither is there a suggestion to modify references in such a way as the make the claimed invention obvious, since none of the references describe the use of a lid URI, or how a lid URI can be used to access MPEG-4 resources in an MPEG-2 TS. Finally, no evidence has been provided that the use of a lid URI was well known to practitioners in the art, for the carriage of MPEG-4 data in an MPEG-2 TS, as recited in claim 40.

CLAIMS 45-50

Claims 45-50 recite additional details of the MPEG-2 OC (claims 45-47), the use of 2 MPEG-2 TSs (claim 48), data types (claim 49), and establishing an interactive link (claim 50). Since claims 45-50 are dependent from claim 40, they can be distinguished from the cited prior art references, as the references do not explicitly disclosure or suggest all the limitations of claim 40.

SUMMARY AND CONCLUSION

It is submitted that for the reasons pointed out above, the claims in the present application clearly and patentably distinguish over the cited references. Accordingly, the Examiner should be reversed and ordered to pass the case to issue.

Respectfully submitted,

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CLAIMS APPENDIX

THE CLAIMS:

1. (previously presented) A uniform resource indictor (URI) pointer method for the retrieving Moving Picture Experts Group 4 (MPEG-4) data pointers in a Moving Picture Experts Group 2 (MPEG-2) transport stream (TS), the method comprising:

receiving an MPEG-2 TS embedded with MPEG-4 resources organized in Object Carousal (OC) transport protocol;

locating a URI in the TS using a local identifier (lid) retrieved from the MPEG-2 TS;

retrieving MPEG-4 resources from the MPEG-2 TS using lid URIs to provide a binding name and access scheme to the objects in the OC; and,

decoding the MPEG-4 resources.

2-5. canceled

6. (previously presented) The method of claim 1 wherein using lid URIs to provide a binding name and access scheme to the objects in the OC includes using a lid URI embedded in an Initial Object Descriptor (IOD) to locate resources in the OC selected from the group including a Binary Format for Scenes (BIFS) scene description stream and an object descriptor stream.

7. (previously presented) The method of claim 1 wherein using an OC transport protocol includes forming a hierarchical directory structure.

8. (original) The method of claim 7 wherein forming a hierarchical directory structure includes forming a hierarchical directory structure including a root directory, sub-directories, files, and streams.

9. (previously presented) The method of claim 1 wherein receiving an MPEG-2 TS includes receiving a first MPEG-2 TS and a second MPEG-2 TS;

wherein locating a URI in the TS includes retrieving a lid URI in the first MPEG-2 TS; and,

wherein retrieving MPEG-4 resources in response to accessing the lid URI includes retrieving MPEG-4 resources from the second MPEG-2 TS.

10. (original) The method of claim 1 wherein retrieving MPEG-4 resources in response to accessing the address includes retrieving MPEG-4 resources selected from the group including audio, video, and systems data.

11. (original) The method of claim 1 wherein decoding the MPEG-4 resources includes an action selected from the group including enhancing audio data in the MPEG-2 TS, enhancing video data in the MPEG-2 TS, and using the systems data to establish an interactive audiovisual scene and communication link.

12. (original) The method of claim 7 further comprising:

caching the OC hierarchical directory.

13. (original) The method of claim 12 further comprising;

using the cached OC hierarchical directory to retrieve MPEG-4 resources.

14. (original) The method of claim 10 further comprising:

establishing an interactive audiovisual scene and communication link in response to decoding MPEG-4 systems data.

15. (previously presented) A uniform resource indictor (URI) pointer method for broadcasting pointers to Moving Picture Experts Group 4 (MPEG-4) data in a Moving Picture Experts Group 2 (MPEG-2) transport stream (TS), the method comprising:

embedding MPEG-4 resources in the MPEG-2 TS, organized in an Object Carousal (OC) transport protocol;

generating a local identifier (lid) URI for accessing MPEG-4 resources, using the lid URIs to provide a binding name and access scheme to the objects in the OC;

embedding the URI in an MPEG-2 TS; and,

broadcasting the MPEG-2 TS.

16-19. canceled

20. (previously presented) The method of claim 15 wherein using lid URIs to provide a binding name and access scheme to the objects in the OC includes using a lid URI embedded in an Initial Object Descriptor (IOD) to locate resources in the OC selected from the group including a Binary Format for Scenes (BIFS) scene description stream and an object descriptor stream.

21. (previously presented) The method of claim 15 wherein using an OC transport protocol includes forming a hierarchical directory structure.

22. (original) The method of claim 21 wherein forming a hierarchical directory structure includes forming a hierarchical directory structure including a root directory, sub-directories, files, and streams.

23. (previously presented) The method of claim 15 wherein embedding the URI in an MPEG-2 TS includes locating a lid URI in a first MPEG-2 TS;

wherein embedding MPEG-4 resources in the MPEG-2 TS includes embedding MPEG-4 resources in a second MPEG-2 TS; and,

wherein broadcasting the MPEG-2 TS includes broadcasting the first and second MPEG-2 TSs.

24. (original) The method of claim 15 wherein generating a URI for accessing MPEG-4 resources located at an address

includes accessing MPEG-4 resources selected from the group including audio, video, and systems data.

25. (previously presented) The method of claim 15 wherein generating a URI for accessing MPEG-4 resources includes resources selected from the group including enhanced audio data in the MPEG-2 TS, enhanced video data in the MPEG-2 TS, and systems data for the establishment of an interactive audiovisual scene and communication link.

26. (previously presented) In a receiver for decoding Moving Picture Experts Group 4 (MPEG-4) data, a uniform resource indictor (URI) pointer system for accessing pointers to MPEG-4 data from a Moving Picture Experts Group 2 (MPEG-2) transport stream (TS), the system comprising:

a receiver having an interface for accepting an MPEG-2 TS with an embedded URI for accessing MPEG-4 resources;

an address access unit having an interface to accept the MPEG-2 TS from the receiver, the address access unit locating a local identifier (lid) URI in the TS, and retrieving MPEG-4 resources embedded in the MPEG-2 TS organized in Object Carousal (OC) transport protocol by building the OC in a directory and using lid URIs to provide a binding name and access scheme to the objects in the OC; and,

a decoder having an interface connected to the address access unit for receiving the MPEG-4 resources and supplying decoded the MPEG-4 information.

27-30. canceled

31. (previously presented) The system of claim 26 wherein the address access unit uses a lid URI embedded in an Initial Object Descriptor (IOD) to locate resources in the OC selected from the group including a Binary Format for Scenes (BIFS) scene description stream and an object descriptor stream.

32. (previously presented) The system of claim 26 wherein the address access unit builds an OC hierarchical directory.

33. (original) The system of claim 32 wherein the address access unit OC hierarchical directory includes a root directory, sub-directories, files, and streams.

34. (previously presented) The system of claim 26 wherein the address access unit receives a first MPEG-2 TS and a second MPEG-2 TS, retrieves a lid URI in the first MPEG-2 TS, and uses the lid URI to retrieve MPEG-4 resources from the second MPEG-2 TS.

35. (original) The system of claim 26 wherein the decoder supplies MPEG-4 resources selected from the group including audio, video, and systems data.

36. (original) The system of claim 26 wherein the decoder supplies resources selected from the group including enhanced audio data in the MPEG-2 TS, enhanced video data in the MPEG-2 TS,

and systems data to establish an interactive audiovisual scene and communication link.

37. (previously presented) The system of claim 26 further comprising:

a cache mechanism for storing the OC hierarchical directory.

38. (original) The system of claim 37 wherein the address access unit uses lid URIs to retrieve MPEG-4 resources from the OC hierarchical directory in the cache mechanism.

39. (original) The system of claim 35 further comprising:

a transmitter having an interface to send MPEG-4 information;

an interactive audiovisual scene and communication link, including the transmitter and receiver, formed in response to decoding MPEG-4 systems data, sending and receiving MPEG-4 information.

40. (previously presented) In a Moving Picture Experts Group 4 (MPEG-4) broadcaster, a uniform resource indictor (URI) pointer system for supplying a Moving Picture Experts Group 2 (MPEG-2) transport stream (TS) with URIs for accessing MPEG-4 data, the system comprising:

an encoder having an interface to accept MPEG-4 information and to supply encoded MPEG-4 resources;

an address pointer unit having an interface to accept the encoded MPEG-4 resources, the address pointer embedding the encoded MPEG-4 resources in a MPEG-2 TS using an Object Carousal (OC) transport protocol, generating a local identifier (lid) URI for accessing the MPEG-4 resources in the MPEG-2 TS using lid URIs to provide a binding name and access scheme to the objects in the OC, and having an interface to supply the MPEG-2 TS; and,

a transmitter having an interface to accept the MPEG-2 TS from the address pointer unit and to broadcast the MPEG-2 TS.

41-44. canceled

45. (previously presented) The system of claim 40 wherein the address pointer unit uses a lid URI embedded in an Initial Object Descriptor (IOD) to locate resources in the OC selected from the group including a Binary Format for Scenes (BIFS) scene description stream and an object descriptor stream.

46. (previously presented) The method of claim 40 wherein the address pointer unit forms an OC system hierarchical directory structure.

47. (original) The system of claim 46 wherein the address pointer forms an OC transport protocol hierarchical directory structure including a root directory, sub-directories, files, and streams.

48. (previously presented) The system of claim 40 wherein the address pointer unit forms a lid URI in a first MPEG-2 TS, and embeds MPEG-4 resources in a second MPEG-2 TS; and,

wherein the transmitter broadcasts the first and second MPEG-2 TSs.

49. (original) The system of claim 40 wherein the address pointer unit generates URIs for MPEG-4 resources selected from the group including audio, video, and systems data.

50. (original) The system of claim 40 wherein the address pointer unit generates URIs for MPEG-4 resources selected from the group including enhanced audio data in the MPEG-2 TS, enhanced video data in the MPEG-2 TS, and systems data for the establishment of an interactive audiovisual scene and communication link.

EVIDENCE APPENDIX

SMPTE STANDARD

for Television — Declarative Data Essence — Local Identifier (lid:) URI Scheme

Table of contents

1 Scope

This standard defines the lid: uniform resource identifier (URI), and describes how it is used to identify instances of resources, such as web pages and graphics files, that are transmitted through unidirectional means, such as a television broadcast.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent edition of the standards indicated below.

IETF RFC 2396, Uniform Resource Identifiers (URI): Generic Syntax

ISO/IEC 11578:1996, Information Technology — Open Systems Interconnection — Remote Procedure Call (RPC), Annex A, Universal Unique Identifier

3 Introduction

Content resources delivered by a one-way broadcast must be identified, stored in a storage system used by the receiver as they are received, and referenced by a uniform scheme for access by applications and systems. Broadcast receivers may use different types of storage devices; therefore, content broadcasters and application developers need a standard syntax for resource storage and reference that does not depend on the specific device or directory syntax, such as the file: URI scheme. A lid: can be bound to a resource entity during authoring and distribution, and may be used to name a device-independent storage location for the entity. The lid: scheme is syntactically similar to the http: scheme, but it is not intended to resolve lid: identifiers to locations outside the broadcast stream or local storage system, as is the case for http: DNS and resource resolution.

The lid: URI scheme enables content creators to assign an authority value that is globally unique. The lid: scheme supports relative paths for resource retrieval, so the authority component can be separately identified in applications to allow relative path references similar to http: and other URI references.

A single lid: can be used to identify different resource instances over time, and will resolve in a receiver to the last instance received with an equivalent lid:. Appropriate lid: identifiers can reduce the storage of redundant instances of resources for better memory efficiency. Storage management for lid: entities is implementation specific and beyond the scope of this specification, but it can be assumed that memory will be finite, and so will the period of persistence of any lid: entity. Applications using lid: should be designed to handle the case where resources have been deleted over time due to storage limitations.

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4 Definition of local identifier (lid:) URI scheme

The lid: URI scheme describes URI references consisting of a sequence of characters which are independent of their coding in octets in any particular character set. The lid: URI fully complies with IETF RFC 2396 except for the overloading of the authority field in the deprecated form.

The layout of the lid: URI follows the generic URI syntax:

lid://<userinfo>@<host>:<port><path>?<query>#<fragment>

Userinfo is an optional string that enables message ID syntax forms of the authority field and, in combination with the host field, complies with the mid: scheme syntax defined in IETF RFC 2392.

Host is a string whose root is a registered domain name or a uuid (ISO/IEC 11578) in string form. Note that the uuid form is deprecated and is intended to support past common practice.

Port is a string to allow syntactic compatibility with IETF RFC 2616 and has no semantic meaning.

Path is a slash-separated string of components identical to the http: scheme syntax as defined in IETF RFC 2616.

Query and fragment are content-type dependent strings compliant with IETF RFC 2396.

Relative path syntax, as described in section 3 of IETF RFC 2396 is also permitted syntactically, but must only be used in cases where there is a guaranteed mechanism to resolve the absolute path (i.e., the BASE URI is well defined). Practical delivery considerations may require that lid: identified resources be delivered on broadcast channels using absolute paths to enable real-time storage in sequence of resource arrival, but relative path resolution must be supported for lid: resource retrieval, assuming an application specifies the base of the URI by other means.

The following are examples of lid:s:

lid://xbc.com/EveningNews/11-March-01/Pacific/main.html

lid://4F4182C71C1FDD4BA0937A7EB7B8B4C1@mail.xbc.com

A deprecated form of usage is to permit host to be an encoded UUID (ISO/IEC 11578). While technically the UUID name space overlaps the domain name space, in practice a collision is entirely improbable. Examples of this deprecated form using UUID are:

lid://4F4182C71C1FDD4BA0937A7EB7B8B4C1/images/logo.gif

lid://4F4182C7-1C1F-DD4B-A093-7A7EB7B8B4C1/images/logo.gif

The UUID is represented as an ASCII hex coding resulting in 32 characters. Note that two syntaxes are permitted — one with some specifically placed separating hyphens and one without (see the BNF definition below).

When different resources are received with matching lid:s, the most recently received resource should be referenced using that lid:. Thus a lid: may refer to different resources over time. One lid: URI can be assigned for all instances of a resource, or multiple unique URIs can be assigned, one for each instance of the resource.

5 Resolution rules

A lid: URI is used to label a resource. Certain parts of the URI are ignored for the purposes of comparison, when the lid: is used for retrieval, or to replace a previously transmitted resource with an equivalent URI. When testing for equivalence, the query and fragment identifiers (i.e., characters in the lid: including and following the first ? or # character) in a lid: URI are ignored. Notwithstanding, references using fragment and query identifiers may function in ways defined by the content type being referenced.

When comparing two URIs to decide if they match or not, a receiver should use a case-sensitive octet-by-octet comparison of the entire URIs, with these exceptions:

- A port that is empty or not given is equivalent to the default port for http:, which is 80;
- Comparisons of host names shall be case insensitive;
- Comparisons of scheme names shall be case insensitive;
- An empty abs_path is equivalent to an abs_path of /.

Characters other than those in the reserved and unsafe sets (see IETF RFC 2396) are equivalent to their % HEX HEX encoding. For example, the following three URIs are equivalent:

lid://abc.com:80/~smith/home.html

lid://ABC.com/%7Esmith/home.html

lid://ABC.com:/%7esmith/home.html

Unlike http:, a lid: URI is not locatable without more information and is thus URN-like in the generic definition in that a URN is associated to a resource and independent of the resource's location. Therefore, the details of resolution of the location of a lid: is application dependent.

6 Normalization and equivalence

In many cases, different URI strings may actually identify the same resource. For example, the host names used in the URL are case insensitive, so the URL <lid://www.XBC.com> is equivalent to <lid://www.xbc.com>. In general, the rules for equivalence and definition of a normal form, if any, are scheme dependent. When a scheme uses elements of the common syntax, it will also use the common syntax equivalence rules; namely, that the scheme and hostname are case insensitive and a URL with an explicit :port, where the port is the default for the scheme, is equivalent to one where the port is elided.

7 Local identifier syntax BNF

The collected BNF for lid: URIs is as follows:

lid = "lid" ":" "//" authority [abs_path] ["?" query] ["#" fragment]

authority = server | uuid

server = as defined in RFC 2396

abs_path = as defined in RFC 2396

query = as defined in RFC 2396

fragment = as defined in RFC 2396

uuid = uuid_simple | uuid_idl

uuid_simple = 32hex

uuid_idl = 8hex "–" 4hex "–" 4hex "–" 4hex "–" 12hex

hex = as defined in RFC 2396

NOTE – The notation <n> (element) means exactly <n> occurrences of (element); e.g., 32hex means exactly 32 hex digits. Use of the uuid authority element is deprecated.

8 Security considerations

The local identifier URI scheme is subject to the same security implications as in general URI schemes, so the usual precautions apply. This means that some local identifier URIs may refer to resources that are not available (because they have not been received, for example), or to resources that have been received but were intentionally misidentified. The security issues associated with this mislabeling, as well as the security issues associated with the use of HTML content which is broadcast, are the same as those identified in section 11.1 of IETF RFC 2387.

Appropriate security mechanisms should be used in the delivery of content identified by lid: URIs. These include protection of the broadcast signal by data encryption and conditional access methods, and protection of content prior to broadcast so that invalid lid:s are not created, and valid lid:s are not modified.

Annex A (informative)
Converting other URI schemes to lid:

URL references using schemes such as http:, ftp:, and file: can be converted to valid lid:s by changing the scheme component and using the original name, host, path, fragment, and query components. This is useful, for instance, to deliver resources stored on Internet servers over a broadcast channel. Note that the original URL port and password fields have no semantic definition in lid:.

Example:

An Internet resident resource at the location

http://www.xbc.com/tv/text.txt

could be packaged in a broadcast stream with a header containing the resource identifier

lid://www.xbc.com/tv/text.txt

and that resource identifier could be used to store the text.txt entity in memory with a derived directory entry, which would be matched by the following lid: reference in an HTML document

href=lid://www.xbc.com/tv/text.txt?ID=myProgram

Annex B (informative)
Bibliography

IETF RFC 2387, The MIME Multipart/Related Content-Type

IETF RFC 2392, Content-ID and Message-ID Uniform Resource Locators

IETF RFC 2616, Hypertext Transfer Protocol — HTTP/1.1

IETF RFC 2717, Registration Procedures for URL Scheme Names

IETF RFC 2718, Guidelines for New URL Schemes

RELATED PROCEEDINGS APPENDIX

NONE